Claims

1. A fuel injection valve for internal combustion engines, having a valve body (1) in which a valve needle (5) that has a longitudinal axis (15) can slide in the longitudinal direction inside a bore (3), wherein the combustion chamber end of the bore (3) is provided with conical valve seat (11) and wherein between a section of the valve needle (5) and the wall of the bore (3), a pressure chamber (19) is formed, which can be filled with fuel and extends to the valve seat (11), and having a valve sealing surface (7) that is embodied on the valve needle (5), which surface cooperates with the valve seat (11) in order to control at least one injection opening leading from the valve seat (11) and contains an annular groove (35), which extends in a radial plane of the valve needle (5) and whose downstream edge is embodied as a sealing edge (38), characterized in that the annular groove (35) is hydraulically connected to the pressure chamber (19) on a continuous basis.

2. The fuel injection valve according to claim 1, characterized in that the valve sealing surface (7) has a first conical surface (30) and a second conical surface (32) disposed downstream of the first, with the annular groove (35) extending between them.

3. The fuel injection valve according to claim 2, characterized in that the opening angle of the first conical surface (30) is smaller than the opening angle of the conical valve seat (11) and the opening angle of the second conical surface (32) is greater than the opening angle of the conical valve seat (11).

4. The fuel injection valve according to claim 2 or 3, characterized in that the annular groove (35) delimits both the first conical surface (30) and the second conical surface (32).

5. The fuel injection valve according to claim 3, characterized in that the seat angle difference (d_2) between the second conical surface (32) and the valve seat (11) is smaller than the seat angle difference (d_1) between the first conical surface (30) and the valve seat (11).

6. The fuel injection valve according to claim 2, characterized in that in the closing motion of the valve needle (5) toward the valve seat (11), the second conical surface (32) comes into contact with the valve seat (11) first and the first conical surface (30) only comes into contact with the valve seat (11) through a deformation of the valve needle (5) and/or the valve body (1).

7. The fuel injection valve according to claim 1, characterized in that the hydraulic connection between the annular groove (35) and the pressure chamber (19) is produced by means of at least one connecting bore (40) extending inside the valve needle (5).

8. The fuel injection valve according to claim 7, characterized in that the connecting bore (40) is embodied as a cross bore (44).

9. The fuel injection valve according to claim 7 or 8, characterized in that the connecting bore (40) connects the annular groove (35) to the shaft (205) of the valve needle (5).

10. The fuel injection valve according to claim 2, characterized in that the hydraulic connection of the annular groove (35) to the pressure chamber (19) is produced by means of at least one recess (42) provided in the first conical surface (30).

11. The fuel injection valve according to claim 3, characterized in that during the closing motion of the valve needle (5), the first part to come into contact with the valve seat (11) is the sealing edge (38) embodied at the transition from the annular groove (35) to the second conical surface (32).

12. The fuel injection valve according to claim 1, characterized in that the fuel in the pressure chamber (19), at least at certain times, has a pressure of more than 100 MPa.